

abrirán nuevas oportunidades para mejorar la enseñanza. Las TI son fundamentales para automatizar y modernizar la educación. Aunque existen desafíos, su implementación es esencial para responder a las exigencias del mundo digital actual.

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THE EFFECTIVENESS OF USING AI TOOLS TO CREATE ADAPTIVE WEB DESIGNS: A COMPARISON OF MANUAL AND AUTOMATED APPROACHES

The objective was to evaluate the effectiveness of manual and AI-driven methods in adaptive web design, with a focus on development time, cost, quality, and user experience. The study examined the process of creating adaptive designs using both traditional manual techniques and AI-powered tools, analyzing the efficiency, advantages, and limitations of AI tools compared to manual approaches.

Adaptive design ensures optimal website display across devices with varying screen sizes. Its core principles involve fluid grids, which use relative units instead of fixed pixels, CSS media queries that adjust styles based on device specifications, flexible images that scale without losing quality, and a mobile-first approach that prioritizes designing for smaller screens before scaling up.

Several key platforms were considered in the study. Wix ADI, Adobe Sensei, and Figma AI automate layout generation, while Fronty, 10Web, and Craftum AI specialize in producing AI-generated adaptive code. These tools rely on various AI technologies, including machine learning for recognizing patterns in successful designs, computer vision for detecting elements, and neural networks for optimizing layout generation.

Table – Manual vs. AI Approach Comparison

Criteria	Manual Method	AI Method
Development Time	High	80% faster
Adaptation Errors	Common	Minimal
Cost	High	Lower (but template-dependent)

The advantages of AI in adaptive design include personalization through user behavior-based adjustments, dynamic adaptation that ensures real-time responsiveness, and automated compliance with accessibility standards such as WCAG. However, AI also has limitations, such as a reliance on templates that can limit uniqueness, the need for human oversight to refine outputs, and difficulties in handling highly innovative or unconventional designs.

Looking ahead, the future of AI in adaptive design may involve fully dynamic adaptation that eliminates fixed breakpoints, context-aware interfaces that adjust based on the user's environment or tasks, and hybrid workflows where AI manages technical adaptation while designers focus on creativity and strategy. The conclusion was that AI significantly speeds up development and reduces costs in adaptive design but achieves the best results when combined with human expertise, ensuring both efficiency and innovation.

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THE APPLICATION OF AI IN WEB DEVELOPMENT

Artificial Intelligence (AI) is rapidly changing the way websites are designed, developed, and experienced. This research explores how modern tools such as ChatGPT, GitHub Copilot, and DeepSeek are used in web development, with a focus on their real-world effectiveness in layout creation. AI significantly